

Seminar 1

Session #01

Kinoshita Daisuke

Institute of Astronomy, National Central University, Taiwan

first semester, academic year 2022
14 September 2022

- Astrophysics Data System (ADS)
 - <https://ui.adsabs.harvard.edu/>
 - a powerful tool to find a paper of your interest

Visit ADS website

The screenshot displays the NASA ADS website interface. At the top, the browser title is 'NASA/ADS -- Mozilla Firefox' and the address bar shows 'https://ui.adsabs.harvard.edu'. The main header features the 'ads' logo and the text 'astrophysics data system'. Navigation links include 'Feedback', 'ORCID', 'About', 'Sign Up', and 'Log In'. Below the header, there are three tabs: 'Classic Form', 'Modern Form' (which is selected), and 'Paper Form'. A search interface is visible, including a 'QUICK FIELD' dropdown menu with options like 'Author', 'First Author', 'Abstract', 'Year', 'Fulltext', and 'All Search Terms'. A search input box is present with a search button. Below the search box, there are two columns of search examples: 'Recommendations' and 'Search examples'. The 'Recommendations' column lists search terms like 'author: "Dawson, Rebekah"', 'first author: "Rees, Martin J."', 'abstract + title: "dark energy"', 'year: 2000', and 'year range: year:2000-2005'. The 'Search examples' column lists search terms like 'citations: citations(abstract:JWST)', 'refereed: property:refereed', 'astronomy: collection:astronomy', 'exact search: =body:"intracluster medium"', and 'institution: inst:CfA'.

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QUICK FIELD: Author First Author Abstract Year Fulltext All Search Terms

Betelgeuse

Recommendations

- author: "Dawson, Rebekah"
- first author: "Rees, Martin J."
- abstract + title: "dark energy"
- year: 2000
- year range: year:2000-2005

Search examples

- citations: citations(abstract:JWST)
- refereed: property:refereed
- astronomy: collection:astronomy
- exact search: =body:"intracluster medium"
- institution: inst:CfA

Visit ADS website

The screenshot shows the ADS website interface. At the top, the search bar contains the query "Betelgeuse" and shows "Your search returned 683 results". Below the search bar, there are filters for "AUTHORS" and "COLLECTIONS". The "AUTHORS" section lists several authors with their respective result counts. The "COLLECTIONS" section lists "astronomy" (674), "physics" (51), and "general" (15). The main content area displays a list of search results, with the first result being a paper titled "Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age" by Neuhauser, R.; Torres, G.; Mugrauer, M. The second result is "Betelgeuse in living colour" by Chiao, May. The third result is "Modeling Extinction and Reddening Effects by Circumstellar Dust in the Betelgeuse Envelope in the Presence of Radiative Torque Disruption" by Truong, Bao; Tram, Le Ngoc; Hoang, Thiem. The fourth result is partially visible. To the right of the search results, there is a "Years" chart showing the number of refereed (blue) and non-refereed (green) publications over time. The x-axis represents years from 1903-1914 to 2011-20, and the y-axis represents the number of publications, ranging from 0 to 300. The chart shows a significant increase in non-refereed publications starting around 2011-20.

QUICK FIELD: Author First Author Abstract Year Fulltext All Search Terms

← Start New Search

Betelgeuse

Your search returned 683 results

Export Explore

AUTHORS

- ☐ Martignoni, M 67
- ☐ Dupree, A 52
- ☐ Guinan, E 37
- ☐ Harper, G 37
- ☐ Perin, G 32

more

COLLECTIONS

- ☐ astronomy 674
- ☐ physics 51
- ☐ general 15

REFERRED

Show highlights Show abstracts Hide Sidebars Go To Bottom

- ☐ 2022MNRAS.516..693N 2022/10
Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age
Neuhauser, R.; Torres, G.; Mugrauer, M. *and 4 more*
- ☐ 2022NatAs.tmp..193C 2022/09
Betelgeuse in living colour
Chiao, May
- ☐ 2022ApJ...936..101T 2022/09 cited: 1
Modeling Extinction and Reddening Effects by Circumstellar Dust in the Betelgeuse Envelope in the Presence of Radiative Torque Disruption
Truong, Bao; Tram, Le Ngoc; Hoang, Thiem *and 9 more*
- ☐ 2022AeJ...936..18D 2022/09

Years Citations Reads

refereed non refereed

300
200
100

1903-1914
1915-1926
1927-1938
1939-1950
1951-1962
1963-1974
1975-1986
1987-1998
1999-2010
2011-20

The screenshot shows the ADS website interface. At the top, the title of the paper is visible: "Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age - NASA/ADS - Mozilla Firefox". The browser address bar shows the URL: "https://ui.adsabs.harvard.edu/abs/2022MNRAS.516..693N/abstract". The ADS logo is on the left, and navigation links like "Feedback", "ORCID", "About", "Sign Up", and "Log In" are on the right. A search bar contains "Betelgeuse". Below the search bar, there are tabs for "Author", "First Author", "Abstract", "Year", "Fulltext", and "All Search Terms". A "Back to results" button is on the left. The main content area displays the title "Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age". Below the title is a "Show affiliations" button and the authors: "Neuhäuser, R. ; Torres, G. ; Mugrauer, M. ; Neuhäuser, D. L. ; Chapman, J. ; Luge, D. ; Cosci, M.". The abstract text begins: "After core hydrogen burning, massive stars evolve from blue-white dwarfs to red supergiants by expanding, brightening, and cooling within few millennia. We discuss a previously neglected constraint on mass, age, and evolutionary state of Betelgeuse and Antares, namely their observed colour evolution over historical times; We place all 236 stars bright enough for their colour to be discerned by the unaided eye ($V \leq 3.3$ mag) on the colour-magnitude-diagram (CMD), and focus on those in the Hertzsprung gap. We study pre-telescopic records on star colour with historically critical methods to find stars that have evolved noticeably in colour within the last millennia. Our main result is that Betelgeuse was recorded with a colour significantly different (non-red)". On the right, there is a "FULL TEXT SOURCES" section with "Publisher" and "arXiv" links. A left sidebar contains a "VIEW" menu with options: "Abstract", "Citations", "References (80)", "Co-Reads", "Similar Papers", "Volume Content", "Graphics", "Metrics", and "Export Citation". Below the "VIEW" menu is a "FEEDBACK" section.

Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age - stac1969.pdf - Mozilla Firefox

Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age - stac1969.pdf

Monthly Notices
ROYAL ASTRONOMICAL SOCIETY
MNRAS 000, 000-000 (2022)
Advance Access publication 2022 July 20
https://doi.org/10.1093/mnras/stac1969

Colour evolution of Betelgeuse and Antares over two millennia, derived from historical records, as a new constraint on mass and age

R. Neuhäuser,¹* G. Torres,²* M. Mugrauer,¹* D. L. Neuhäuser,³ J. Chapman,⁴† D. Luge¹ and M. Covsi⁵

¹Geophysikalisches Institut und Universitäts-Sternwarte Bonn, Sötkinghofen 2-5, D-53175, Bonn, Germany
²Center for Astrophysics | Harvard & Smithsonian, 60 Garden Street, Cambridge, MA 02138, USA
³Moravia, Alko Adige, Italy
⁴Department of East Asian Languages and Cultures, UC Berkeley, Berkeley, CA 94720, USA
⁵Department of Philosophy and Cultural Heritage, Ca' Foscari University Venice, Malamonte Marconi, Dorsoduro 3484/D, I-30122 Venice, Italy

Accepted 2022 July 7. Received 2022 July 7; in original form 2022 March 9

ABSTRACT
 After core hydrogen burning, massive stars evolve from blue-white dwarfs to red supergiants by expanding, brightening, and cooling within few millennia. We discuss a previously neglected constraint on mass, age, and evolutionary state of Betelgeuse and Antares, namely their observed colour evolution over historical times: We place all 236 stars bright enough for their colour to be discerned by the unaided eye ($V \leq 3.3$ mag) on the colour-magnitude-diagram (CMD), and focus on those in the Hertzsprung gap. We study pre-telescopic records on star colour with historically critical methods to find stars that have evolved noticeably in colour within the last millennia. Our main result is that Betelgeuse was recorded with a colour significantly different (non-red) than today (red, $B - V = 1.78 \pm 0.05$ mag). Hyginus (Rome) and Sima (Qin) (China) independently report it two millennia ago as appearing like Saturn ($B - V = 1.09 \pm 0.16$ mag) in colour and 'yellow' (quantifiable as $B - V = 0.95 \pm 0.35$ mag), respectively (together, 5.1σ different from today). The colour change of Betelgeuse is a new, tight constraint for single-star theoretical evolutionary models (or merger models). It is most likely located less than one millennium past the bottom of the red giant branch, before which rapid colour evolution is expected. Evolutionary tracks from MIST consistent with both its colour evolution and its location on the CMD suggest a mass of $\sim 14 M_{\odot}$ at ~ 14 Myr. The (roughly) constant colour of Antares for the last three millennia also constrains its mass and age. Wezen was reported white historically, but is now yellow.

Key words: history and philosophy of astronomy – stars: evolution – Hertzsprung-Russell and colour-magnitude-diagram – stars: individual: Betelgeuse, Antares, Wezen – supergiants.

1 INTRODUCTION
 Historical observations provide valuable input for many fields of astrophysics. Examples include the reconstruction of past solar activity with sunspots and aurorae (review in Vaquero & Vaquero 2016; see also Neuhäuser & Neuhäuser 2015), the determination of cometary orbits (compilation in Kowal 1999; recent example in Hertzsprung gap, which is consistent with its location in the colour-magnitude-diagram (CMD) and constrains its parameters. Only historical observations can provide such an empirical constraint. The evolution of stars is often studied with the Hertzsprung-Russell diagram (HRD; luminosity versus temperature) or the CMD (brightness versus colour). During the stable, central hydrogen-burning phase, observable parameters hardly change for 10^4 – 10^7 yr

Downloaded from https://academic.oup.com/mnras/advance-article/doi/10.1093/mnras/stac1969/6700000 by National Central University user on 07 July 2022

Visit ADS website

The screenshot shows the NASA ADS website in a Mozilla Firefox browser. The address bar displays <https://ui.adsabs.harvard.edu>. The page header includes the ADS logo, navigation links for Feedback, ORCID, About, Sign Up, and Log In, and the main title "astrophysics data system". Below the title are three search form options: Classic Form, Modern Form (selected), and Paper Form. A search bar contains the text "ortho-to-para ratio" and a search button. Below the search bar are two columns of search examples: Recommendations and Search examples.

QUICK FIELD: Author First Author Abstract Year Fulltext All Search Terms

ortho-to-para ratio

Recommendations		Search examples	
author	author:"Dawson, Rebekah"	citations	citations(abstract:JWST)
first author	author:"Rees, Martin J."	refereed	property:refereed
abstract + title	abs:"dark energy"	astronomy	collection:astronomy
year	year:2000	exact search	=body:"intracluster medium"
year range	year:2000-2005	institution	inst:CfA

Visit ADS website

The screenshot shows the ADS website interface. At the top, there's a search bar with the query "ortho-to-para ratio" and a search button. Below the search bar, it says "Your search returned 276 results". There are filters for "Date" and buttons for "Export" and "Explore".

AUTHORS

- Kawakita, H 36
- Neufeld, D 29
- Shimnaka, Y 21
- Bergin, E 20
- Bockelée-Morvan, D 17

COLLECTIONS

- astronomy 264
- physics 18
- general 5

Search Results:

- 2022ApJ...933L..35F** 2022/07
A Detailed Temperature Map of the Archetypal Protostellar Shocks in L1157
Feng, S.; Liu, H. B.; Caselli, P. *and 5 more*
- 2022A&A...663A..43C** 2022/07
Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko
Cheng, Y. -C.; Bockelée-Morvan, D.; Roos-Serote, M. *and 9 more*
- 2022AAS...24013404Y** 2022/06
Ortho/Para Ratio of Formaldehyde Formed in UV-Photolyzed Interstellar Ice Analogs
Yocum, Katarina; Wilkins, Olivia; Milam, Stefanie *and 1 more*

Years Citations Reads

The bar chart displays the number of citations (blue bars) and reads (green bars) for the search results over time. The x-axis represents years from 1971 to 2022. The y-axis represents the number of citations and reads, ranging from 0 to 60. The chart shows a significant increase in citations and reads starting around 2010, peaking in 2022.

Year	Citations	Reads
1971-1975	0	0
1976-1980	0	0
1981-1985	0	0
1986-1990	0	0
1991-1995	0	0
1996-2000	0	0
2001-2005	0	0
2006-2010	0	0
2011-2015	0	0
2016-2020	0	0
2021-2022	0	0

The screenshot shows the ADS website interface. At the top, the browser title is "Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko - NASA/ADS - Mozilla Firefox". The address bar shows the URL "https://ui.adsabs.harvard.edu/abs/2022AN26A...663A.43Cobstrat". The ADS logo is on the left, and navigation links like "Feedback", "ORCID", "About", "Sign Up", and "Log In" are on the right. A search bar contains "ortho-to-para ratio". Below the search bar, there are tabs for "QUICK FIELD: Author", "First Author", "Abstract", "Year", "Fulltext", and "All Search Terms".

VIEW

- Abstract
- Citations
- References (31)
- Co-Reads
- Similar Papers
- Volume Content
- Graphics
- Metrics
- Export Citation

FEEDBACK

Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko

Show affiliations

Cheng, Y. -C.; Bockelée-Morvan, D.; Roos-Serote, M.; Crovisier, J.; Debout, V.; Erard, S.; Drossart, P.; Leyrat, C.; Capaccioni, F.; Filacchione, G.; Dubernet, M. -L.; Encrenaz, T.

Context. Abundance ratios of the nuclear-spin isomers of H₂O and NH₃ have been measured in about two dozen comets, with a mean value corresponding to a nuclear-spin temperature of ~30 K. The real meaning of these unequilibrated nuclear-spin abundance ratios is still debated. However, an equilibrated water ortho-to-para ratio of 3 is also commonly observed.

Aims. The H channel of the Visible and Infrared Thermal Imaging Spectrometer (VIRTIS-H) on board Rosetta provided high-resolution 2.5-2.9 μm spectra of H₂O vapour in the coma of comet 67P/Churyumov-Gerasimenko (67P), which are suitable for the determination of the ortho-to-para ratio (OPR) of water in this comet.

FULL TEXT SOURCES

Publisher
arXiv

GRAPHICS

Click to view more

Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko - aa42494-21.pdf -- Mozilla Firefox

Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko

1 Introduction
 2 VIRTIS-H observations and selected datasets
 3 Fitting method, data analysis and retrievals
 3.1 H₂O spectrum in the 2.5–3- μ m range
 3.2 Synthetic H₂O spectra
 3.3 baseline subtraction and data combination
 3.4 fitting procedure
 3.5 Results of the fitting process
 3.5.1 Dataset
 3.5.2 OPRs derived in low column density cases
 3.5.3 OPRs derived from the H₂O hot-band spectral region
 4 Radiative transfer calculations and 67P water OPR
 4.1 Radiative transfer model
 4.2 Comparison of RT model and data outputs
 4.2.1 Direct comparison of optical depth effects in modelled and observed spectra
 4.2.2 Opacity

A&A 663, A43 (2022)
<https://doi.org/10.1051/0004-6361/202342494>
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**Astronomy
Astrophysics**

Water ortho-to-para ratio in the coma of comet 67P/Churyumov-Gerasimenko

Y.-C. Cheng^{1,2}, D. Bouček^{1,c}, M. Roos-Sentot¹, J. Crovisier¹, V. Debout¹, P. Drossart¹, C. Leygraf¹, F. Capaccioni³, G. Filacchione³, M.-L. Dubernet⁴, and T. Encrenaz¹

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³ Istituto di Astrofisica e Planetologia Spaziale, Istituto Nazionale di Astrofisica, via del Fosso del Cavaliere 100, 00131 Rome, Italy
⁴ LERMA, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, 5 place Jules Janssen, 92195 Meudon Cedex, France

Received 20 October 2021 / Accepted 25 February 2022

ABSTRACT

Context. Abundance ratios of the nuclear spin isomers of H₂O and NH₃ have been measured in about two dozen comets, with a mean value corresponding to a nuclear-spin temperature of ~30 K. The real meaning of these unequilibrated nuclear-spin abundance ratios is still debated. However, an equilibrated water ortho-to-para ratio of 3 is also commonly observed.

Aims. The H channel of the Visible and Infrared Thermal Imaging Spectrometer (VIRTIS-H) on board Rosetta provided high-resolution 2.5–2.9 μ m spectra of H₂O vapour in the coma of comet 67P/Churyumov-Gerasimenko (67P), which are suitable for the determination of the ortho-to-para ratio (OPR) of water in this comet.

Methods. A large dataset of VIRTIS-H spectra obtained in limb-seeing viewing geometry was analysed, covering heliocentric distances from 1.24 to 2.73 au and altitudes from a few hundred metres to > 100 km. The OPR, together with the H₂O rotational temperature and column density, were derived for each spectra using a database of fluorescence synthetic spectra that include both fundamental and hot vibrational water bands. The weak lines of the $v_1 + v_2 = v_3$ and $v_1 + v_2 = v_4$ bands in the 2.74–2.90 μ m range were used to calculate by low mass the strong v_1 band centred at 2.67 μ m is attenuated due to optical depth effects, expressed by the attenuation factor f_{att} .

Results. Most ortho-to-para ratio determinations are strongly affected by opacity effects, as demonstrated by the observed anti-correlation between the OPR and the column density, and the correlation between the OPR and attenuation factor f_{att} . Based on both radiative transfer calculations and OPR values obtained in low-opacity conditions, we derive an OPR of 2.94 ± 0.06 for comet 67P. Measured water rotational temperatures show a decrease in gas kinetic temperature with increasing altitude caused by adiabatic cooling. Helio-centric variations are also observed, with warmer temperatures near perihelion.

Conclusions. The water ortho-to-para ratio measured in the coma of 67P is consistent with laboratory experiments showing that water vapour that has thermally desorbed from water ice has a statistical value of 3, regardless of the past formation process of water ice.

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Recommendations	Search examples
author: "Kleint, Lucia"	citations: citations(abstract:JWST)
first author: "Zaldarriaga, Matias"	refereed: property:refereed
abstract + title: abs:"dark energy"	astronomy: collection:astronomy
year: year:2000	exact search: =body:"intracluster medium"
year range: year:2000-2005	institution: inst:CfA

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Visit ADS website

abs:"allende meteorite" - NASA/ADS - Mozilla Firefox

abs:"allende meteorite" x

https://ui.adsabs.harvard.edu/search?q=abs:"allende meteorite"&sort=date_desc%2Cbibcode_desc&p_0

35%

ads Feedback ORCID About Sign Up Log In

QUICK FIELD: Author First Author Abstract Year Fulltext All Search Terms

Start New Search

abs:"allende meteorite" Q

Your search returned 825 results

Date Export Explore

AUTHORS

- Grossman, L 30
- Heymann, D 28
- Wasserburg, G 26
- Yurimoto, H 26
- Palme, H 23

more

COLLECTIONS

- astronomy 778
- physics 151
- general 60

REFEREED

Show highlights Show abstracts Hide Sidebars Go To Bottom

- 2022AmMin.107...873H 2022/05
Atomic-scale structure and non-stoichiometry of meteoritic hibonite: A transmission electron microscope study
Han, Jangmi; Ohnishi, Ichiro; Yasuhara, Akira *and 1 more*
- 2022GeCoA.323...291K 2022/04
Erratum to "In situ Si isotope and chemical constraints on formation and processing of chondrules in the Allende meteorite" [Geochimica et Cosmochimica Acta 304 (2021) 234-257]
Kadlag, Yogita; Tatzel, Michael; Frick, Daniel A. *and 2 more*
- 2021DPS....5330625D 2021/10
Investigating the MIR spectral features of an Allende meteorite powder mixed with KBr

Years Citations Reads

refereed non refereed

Year	refereed	non refereed
1969-1973	40	0
1974-1978	90	30
1979-1983	75	45
1984-1988	85	55
1989-1993	60	40
1994-1998	40	50
1999-2003	30	40
2004-2008	20	20
2009-2013	20	20
2014-2018	20	20
2019-2023	20	20

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property:refereed abs:JWST

Recommendations	Search examples
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year: year:2000	exact search: =body:"intracluster medium"
year range: year:2000-2005	institution: inst:CfA

Visit ADS website

property:refereed abs:"JWST*" - NASA/ADS - Mozilla Firefox

property:refereed abs:"JWST*" x

https://ui.adsabs.harvard.edu/search?q=property:3Arefereed%20abs%3A%20JWST*sort=date_desc%2C bibcode_desc,=0

ads Feedback - ORCID - About - Sign Up Log In

QUICK FIELD: Author First Author Abstract Year Fulltext All Search Terms

Start New Search

property:refereed abs:"JWST*" X Q

Your search returned 1,694 results

Export Explore

Go To Bottom

Show highlights Show abstracts Hide Sidebars

AUTHORS

- Seager, S 49
- Fortney, J 43
- Latham, D 39
- Trenti, M 36
- Crossfield, I 34

COLLECTIONS

- astronomy 1.6k
- physics 132
- general 28

REFEREED

1 2022MNRAS.516.1524K 2022/10

The feasibility of constraining DM interactions with high-redshift observations by JWST
Kurmus, Ali; Bose, Sowndak; Lovell, Mark *and 4 more*

2 2022MNRAS.516.1047M 2022/10 cited: 3

The BLUETIDES mock image catalogue: simulated observations of high-redshift galaxies and predictions for JWST imaging surveys
Marshall, Madeline A.; Watts, Katelyn; Wilkins, Stephen *and 7 more*

3 2022MNRAS.516..506C 2022/10 cited: 1

Observability of forming planets and their circumplanetary discs - IV. With JWST and ELT
Chen, Xueqing; Szulágyi, Judit

Years Citations Reads

■ refereed ■ non refereed

Year	Refereed	Non-refereed
2001	~10	0
2002	~15	0
2003	~20	0
2004	~25	0
2005	~30	0
2006	~35	0
2007	~40	0
2008	~45	0
2009	~50	0
2010	~60	0
2011	~70	0
2012	~80	0
2013	~90	0
2014	~100	0
2015	~120	0
2016	~150	0
2017	~200	0
2018	~300	0
2019	~350	0
2020	~380	0
2021	~400	0
2022	~450	0

The screenshot shows a web browser window displaying search results from the Astrophysics Data System (ADS). The search criteria are 'property:refereed abs: JWST'. The results are sorted by date in descending order. The top result is 'HD 28109 hosts a trio of transiting Neptunian planets including a near-resonant pair, confirmed by ASTEP from Antarctica' by Dransfield et al. (2022). Other results include 'EMPRESS. V. Metallicity Diagnostics of Galaxies over 12 $+ \log(O/H) \approx 6.9-8.9$ Established by a Local Galaxy Census: Preparing for JWST Spectroscopy', 'The JWST Early Release Observations', 'First Peek with JWST/NIRCam Wide-field Slitless Spectroscopy: Serendipitous Discovery of a Strong [O III]H $\alpha</math> Emitter at z = 6.11', 'AU Microscopii in the Far-UV: Observations in Quiescence, during Flares, and Implications for AU Mic b and c', 'TOI-1452 b: SPIRou and TESS Reveal a Super-Earth in a Temperate Orbit Transiting an M4 Dwarf', and 'Measuring Elemental Abundances of JWST Target Stars for Exoplanet Characterization. I. FGK Stars'.$

Item ID	Date	Cited	Title	Authors	More Info
14	2022ApJS...262....3N	2022/09	cited: 5	HD 28109 hosts a trio of transiting Neptunian planets including a near-resonant pair, confirmed by ASTEP from Antarctica	Dransfield, Georgina; Triaud, Amaury H. M. J.; Guillot, Tristan <i>and 28 more</i>
15	2022ApJ...936L..14P	2022/09	cited: 31	EMPRESS. V. Metallicity Diagnostics of Galaxies over $12 + \log(O/H) \approx 6.9-8.9$ Established by a Local Galaxy Census: Preparing for JWST Spectroscopy	Nakajima, Kimihiko; Ouchi, Masami; Xu, Yi <i>and 13 more</i>
16	2022ApJ...936L...8S	2022/09	cited: 3	The JWST Early Release Observations	Pontoppidan, Klaus M.; Barrientes, Jaclyn; Blome, Claire <i>and 34 more</i>
17	2022AJ...164..110F	2022/09	cited: 2	First Peek with JWST/NIRCam Wide-field Slitless Spectroscopy: Serendipitous Discovery of a Strong [O III]H α Emitter at z = 6.11	Sun, Fengwu; Egami, Eiichi; Pirzkal, Nor <i>and 16 more</i>
18	2022AJ...164...96C	2022/09	cited: 2	AU Microscopii in the Far-UV: Observations in Quiescence, during Flares, and Implications for AU Mic b and c	Feinstein, Adina D.; France, Kevin; Youngblood, Allison <i>and 13 more</i>
19	2022AJ...164...87K	2022/09	cited: 7	TOI-1452 b: SPIRou and TESS Reveal a Super-Earth in a Temperate Orbit Transiting an M4 Dwarf	Cadieux, Charles; Doyon, René; Plotnykov, Mykhaylo <i>and 53 more</i>
				Measuring Elemental Abundances of JWST Target Stars for Exoplanet Characterization. I. FGK Stars	

The screenshot shows the ADS website interface. At the top, the browser title is "The JWST Early Release Observations - NASA/ADS - Mozilla Firefox". The address bar shows the URL "https://ui.adsabs.harvard.edu/abs/2022ApJ...936L..14F/abstract". The ADS logo is on the left, and navigation links for "Feedback", "ORCID", "About", "Sign Up", and "Log In" are on the right. Below the navigation bar is a search bar with the text "property:refereed abs:'JWST'" and a search button. A "QUICK FIELD" dropdown menu is also visible. On the left side, there is a "VIEW" menu with options like "Abstract", "Citations (31)", "References (37)", "Co-Reads", "Similar Papers", "Volume Content", "Graphics", "Metrics", and "Export Citation". The main content area displays the title "The JWST Early Release Observations" and a list of authors with ORCID icons. Below the author list is a paragraph of text describing the JWST Early Release Observations (EROs). On the right side, there is a "FULL TEXT SOURCES" section listing "arXiv" as a source.

The JWST Early Release Observations

Show affiliations Show all authors

Pontoppidan, Klaus M. ; Barrientes, Jaclyn ; Blome, Claire ; Braun, Hannah ; Brown, Matthew ; Carruthers, Margaret ; Coe, Dan ; DePasquale, Joseph ; Espinoza, Néstor ; Marin, Macarena Garcia ; Gordon, Karl D. ; Henry, Alaina ; Hustak, Leah ; James, Andi ; Jenkins, Ann ; Koekemoer, Anton M. ; LaMassa, Stephanie ; Law, David ; Lockwood, Alexandra ; Moro-Martin, Amaya ; ...

The James Webb Space Telescope (JWST) Early Release Observations (EROs) is a set of public outreach products created to mark the end of commissioning and the beginning of science operations for JWST. Colloquially known as the "Webb First Images and Spectra," these products were intended to demonstrate to the worldwide public that JWST is ready for science, and is capable of producing spectacular results. The package was released on 2022 July 12 and included images and spectra of the galaxy cluster SMACS J0723.3-7327 and distant lensed galaxies, the interacting

FULL TEXT SOURCES

Publisher
arXiv

The JWST Early Release Observations - pdf - Mozilla Firefox

The JWST Early Release | The JWST Early Release | +

https://iopscience.iop.org/article/10.3847/2041-8213/acba4e/pdf

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1. Purpose and Design
2. ERO Target Selection and Production Support
3. Observations
4. Data Processing
5. Image Visualization
References

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OPEN ACCESS

The JWST Early Release Observations

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Received 2022 July 26; revised 2022 August 12; accepted 2022 August 14; published 2022 September 2

Abstract

The James Webb Space Telescope (JWST) Early Release Observations (EROs) is a set of public outreach products created to mark the end of commissioning and the beginning of science operations for JWST. Colloquially known as the “Webb First Images and Spectra,” these products were intended to demonstrate to the worldwide public that JWST is ready for science, and is capable of producing spectacular results. The package was released on 2022 July 12 and included images and spectra of the galaxy cluster SMACS J0723.3-7327 and distant lensed galaxies, the interacting galaxy group Stephan’s Quintet, NGC 3324 in the Carina star-forming complex, the Southern Ring planetary nebula NGC 3132, and the transiting hot Jupiter WASP-96b. This paper describes the ERO technical design, observations, and scientific processing of data underlying the colorful outreach products.

Unified Astronomy Thesaurus concepts: Astronomy education (2165); High-redshift galaxy clusters (2007); Exoplanet atmospheres (487); Star-forming regions (1565); Planetary nebulae (1249); Galaxy mergers (66)

1. Purpose and Design

The JWST Early Release Observations (EROs) were designed to demonstrate that the observatory is ready for science, and is capable of producing spectacular results. This follows the precedents set by the Chandra and Spitzer space telescopes, which produced similar EROs after their launch and successful commissioning, and by the Hubble Space Telescope subsequent to each servicing mission. The observations were to be used to produce a colorful set of images and spectra for a public press release. However, given the great leap in sensitivity and resolution of JWST compared to the previous generations of infrared telescopes, the ERO data are also available

The science data underlying the First Images and Spectra were publicly released on the Mikulski Archive for Space Telescopes (MAST) on 2022 July 13. The observations highlight key science areas where JWST is most likely to make transformational contributions to astrophysics: Early galaxies, interacting galaxies, stellar birth and death, and other worlds (i.e., exoplanets).

This paper presents the JWST First Images and Spectra data and describes their observational design, processing, and visualization steps carried out to support the press event. We do not present any scientific analysis of the data set, and leave this as the astronomical community. All the public outreach

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The JWST Early Release Observations - pdf - Mozilla Firefox

The JWST Early Release - x The JWST Early Release - x +

https://iopscience.iop.org/article/10.3847/2041-8213/acba4e3pdf

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1. Purpose and Design
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Pontoppidan et al.

Figure 4. Field of view of NGC 3132 covered by NIRCam and MIRI. The framing was selected using archival images from Spitzer, as shown.¹³

Table 4
 Observation Parameters for NGC 3132/PD 2733 (Southern Ring Nebula)

Instrument	Mode	Filter/Dispenser	Exposure Time ^a Seconds per Filter/Dispenser	Observing Date
NIRCam	Imaging	F117N/F122N/F405N/F430N	2319	2022 Jun 3
NIRCam	Imaging	F606W/F550W	1440	2022 Jun 3
MIRI	Imaging	F770W/F1130W/F1280/F1800W	1354	2022 Jun 12

Note:
^a Maximum depth in field.

3.4.2. MIRI Imaging

We imaged with MIRI NGC 3132 using two tiles to cover roughly the same field of view as NIRCam Module B. The exposure times are set using archival Spitzer IRAC and MIPS images, along with Spitzer spectroscopy to model performance, as the mid-infrared nebula is entirely dominated by emission lines. We target the 11.3 micron PAH specifically, as it is seen

such that the maximum number of counts achieved on each integration was conservatively at about 50% of the saturation level of the NIRS2 detector; these were optimized using Parafito et al. (2017). To schedule the event, we used the period and time-of-transit center obtained by Patel & Espinoza (2022), as well as the ExoCTK tools to define the optimal position angles and phase constraints to capture it

Observation ID: 30014

Visit ADS website

The screenshot shows the NASA ADS website in a Mozilla Firefox browser. The address bar displays `https://ui.adsabs.harvard.edu`. The page header includes the ADS logo, navigation links for Feedback, ORCID, About, Sign Up, and Log In, and three search form options: Classic Form, Modern Form (selected), and Paper Form. Below the header, a search bar contains the query `bibstem:A&A year:2022 abs:"exoplanet"`. A dropdown menu for "QUICK FIELD" is set to "All Search Terms". Below the search bar, there are two columns of search examples: "Recommendations" and "Search examples".

Recommendations	Search examples
author: "Kleint, Lucia"	citations: citations(abstract:JWST)
first author: "Zaldarriaga, Matias"	refereed: property:refereed
abstract + title: abs:"dark energy"	astronomy: collection:astronomy
year: year:2000	exact search: =body:"intracluster medium"
year range: year:2000-2005	institution: inst:CfA

Visit ADS website

The screenshot shows the ADS website interface. At the top, the search bar contains the query "bibstem:A&A year:2022 abs:"exoplanet"". Below the search bar, it indicates "Your search returned 128 results". The main content area displays a list of search results, with the first three visible:

- 1. 2022A&A...665A...30S 2022/09
Flares and rotation of M dwarfs with habitable zones accessible to TESS planet detections
Stelzer, B.; Bogner, M.; Magaudda, E. *and 1 more*
- 2. 2022A&A...665A...25C 2022/09
A giant planet shaping the disk around the very low-mass star CIDA 1
Curone, P.; Izquierdo, A. F.; Testi, L. *and 13 more*
- 3. 2022A&A...665A...11H 2022/09
Transit least-squares survey. IV. Earth-like transiting planets expected from the PLATO mission
Heller, René; Harre, Jan-Vincent; Samadi, Réza

On the left side, there are navigation menus for "AUTHORS" (listing names like Palle, E., Udry, S., Ribas, I., Sousa, S., Lovis, C.) and "COLLECTIONS" (listing astronomy, physics, general). On the right side, there are options for "Export" and "Explore", and a "Years" filter section with a message: "Too little data to make a useful graph."

- Today's exercise for attendance check
 - Start your favourite web browser.
 - Go to the page <https://ui.adsabs.harvard.edu/>.
 - Type a keyword (or a set of keywords) in the search box.
 - Push the button and go through the search result.
 - Choose a paper of your interest.
 - Download PDF file.
 - Make sure to choose Publisher's PDF file.
 - Do not choose arXiv's PDF file if Publisher's PDF file is available.
 - Tell us how you are interested in the paper you choose.
- Go to following page to find a link to the Google Forms.
 - https://s3b.astro.ncu.edu.tw/seminar1_202209/material/
 - To access to above page, you need to connect to Wi-Fi of our Institute.
- Submit your responses using Google Forms.
- Deadline: 10:00 on 21/Sep/2022